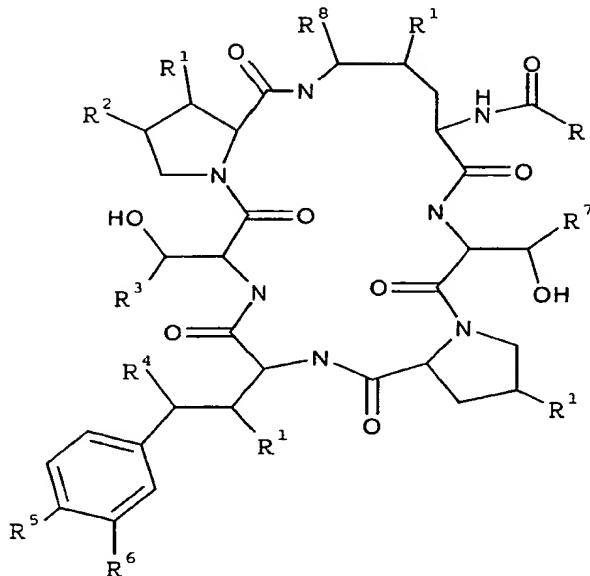


WE CLAIM:

1. A compound represented by structure I



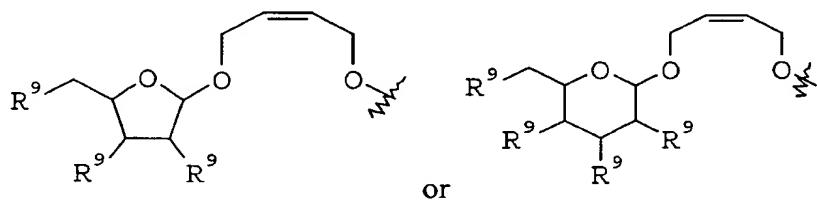
wherein

R is an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or heteroaryl group;

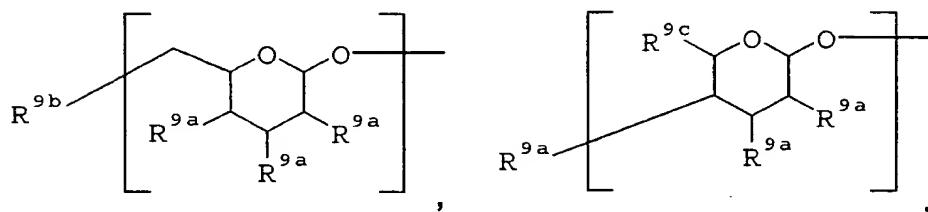
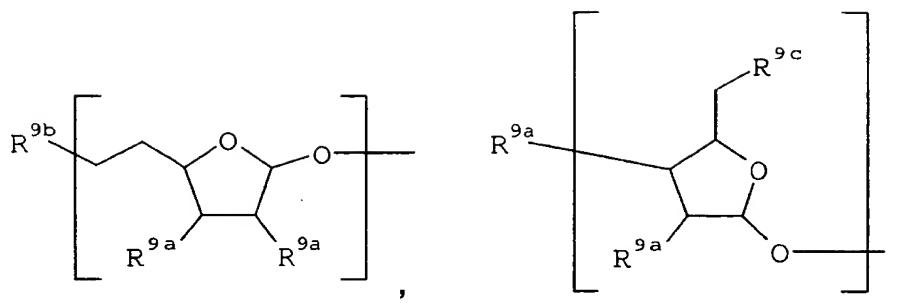
5 R<sup>1</sup> is independently -H, -OH or -O-Pg; R<sup>2</sup> is -H, -CH<sub>3</sub>, -NH<sub>2</sub>, or -NH-Pg;

R<sup>3</sup> is -H, -CH<sub>3</sub>, -CH<sub>2</sub>CONH<sub>2</sub>, -CH<sub>2</sub>CONH-Pg, -CH<sub>2</sub>CH<sub>2</sub>NH<sub>2</sub>, or -CH<sub>2</sub>CH<sub>2</sub>NH-Pg;

R<sup>5</sup> is -OH, -OSO<sub>3</sub>H, or -OPO<sub>2</sub>HR<sup>a</sup>, where R<sup>a</sup> is hydroxy, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>1</sub>-C<sub>6</sub> alkoxy, phenyl, phenoxy, *p*-halophenyl, *p*-halophenoxy, *p*-nitrophenyl, *p*-nitrophenoxy, benzyl, benzyloxy, *p*-halobenzyl, *p*-halobenzyloxy, *p*-nitrobenzyl, or *p*-nitrobenzyloxy; R<sup>6</sup> is -H, -OH, or -OSO<sub>3</sub>H; R<sup>7</sup> is -H or -CH<sub>3</sub>; R<sup>4</sup> and R<sup>8</sup> are independently, hydrogen, or hydroxy and at least one of R<sup>4</sup> and R<sup>8</sup> is a sugar moiety of the formula



where R<sup>9</sup> is independently -H, -OH, -N<sub>3</sub>, -O-Pg, -NH<sub>2</sub>, -NH-Pg, -OPO<sub>2</sub>R<sup>a</sup>, or a second sugar moiety comprising one to three sugar units selected from the group consisting of

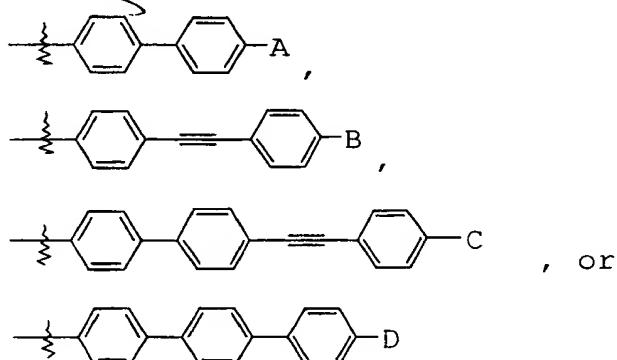


, and mixtures

thereof, wherein  $R^{9a}$  is  $-H$ ,  $-OH$ ,  $-N_3$ ,  $-NH_2$ ,  $-O-Pg$ , or  $-NH-Pg$ ,  $R^{9b}$  is  $-OPO_2R^a$ ,  $-OSO_3H$ ,  $-H$ ,  $-NH_2$ ,  $-OH$ ,  $-O-Pg$ , or  $-NH-Pg$ ,  $R^{9c}$  is  $-CH_3$ ,  $-CH_2OH$ ,  $-CH_2N_3$ ,  $-CH_2OSO_3H$ ,  $-CH_2NH-Pg$ ,  $-CH_2O-Pg$ ,  $-CO_2H$ , or  $-CO_2-Pg$ , where  $R^a$  is as defined above, and no more than one

5  $R^9$  is represented by said second sugar moiety; Pg is a protecting group (i.e.,  $-O-Pg$  is a hydroxy protecting group,  $-NH-Pg$  is an amino protecting group,  $-CH_2CONH-Pg$  is an amido protecting group and  $-CO_2-Pg$  is a carboxy protecting group); and pharmaceutically acceptable salts, esters, hydrates or solvates thereof.

2. The compound of Claim 1 wherein R is

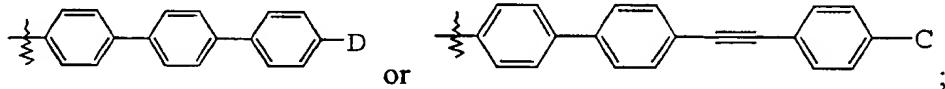


10 where A, B, C and D are independently hydrogen,  $C_1-C_{12}$  alkyl,  $C_2-C_{12}$  alkynyl,  $C_1-C_{12}$  alkoxy,  $C_1-C_{12}$  alkylthio, halo, or  $-O-(CH_2)_m-[O-(CH_2)_n]_p-O-(C_1-C_{12}$  alkyl) or  $-O-(CH_2)_q-X-E$ ; m is 2, 3 or 4; n is 2, 3 or 4; p is 0 or 1; q is 2, 3 or 4; X is pyrrolidino, piperidino or

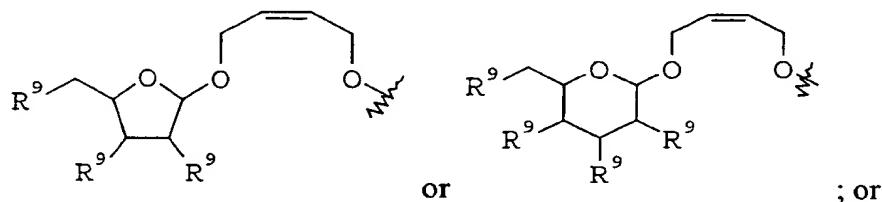
piperazino; and E is hydrogen, C<sub>1</sub>-C<sub>12</sub> alkyl, C<sub>3</sub>-C<sub>12</sub> cycloalkyl, benzyl or C<sub>3</sub>-C<sub>12</sub> cycloalkylmethyl.

3. The compound of claim 2 wherein R<sup>1</sup> is hydroxy at each occurrence; R<sup>2</sup>, R<sup>3</sup>, and R<sup>7</sup> are each methyl; R is a moiety of the formula

5



R<sup>4</sup> is hydroxy; R<sup>5</sup> is -OPO<sub>2</sub>HR<sup>a</sup>, where R<sup>a</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>1</sub>-C<sub>4</sub> alkoxy; R<sup>8</sup> is a sugar moiety of the formula

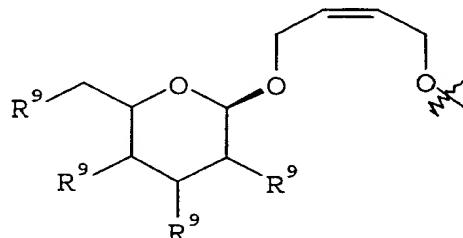


10 a pharmaceutically acceptable salt or solvate thereof.

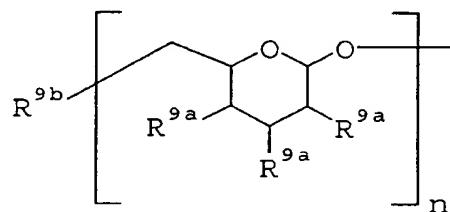
4. The compound of claim 3 wherein R<sup>5</sup> is hydroxy; R is a moiety of the formula



where D is hydrogen or C<sub>3</sub>-C<sub>7</sub> alkoxy; R<sup>8</sup> is a moiety of the formula

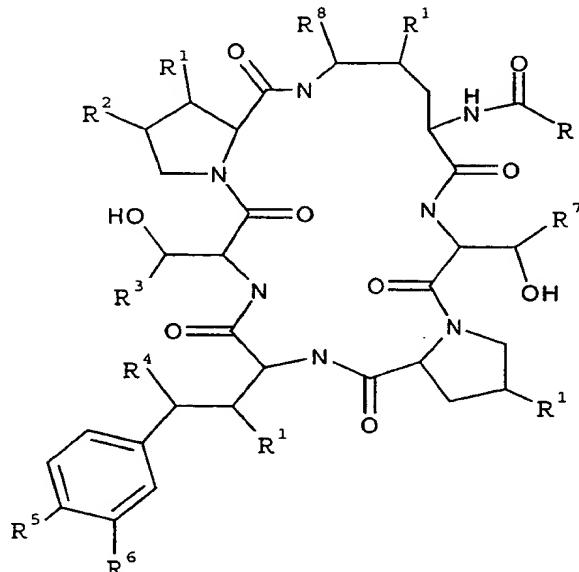


15 where R<sup>9</sup> is independently hydrogen, hydroxy, amino, or a moiety of the formula

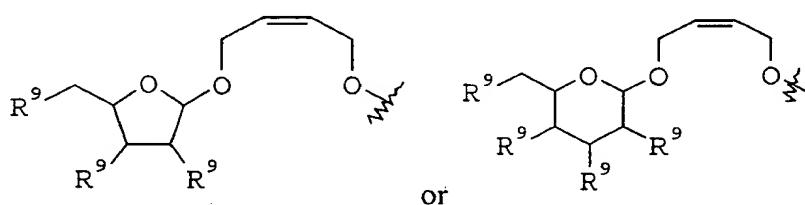


where R<sup>9b</sup> is -OPO<sub>2</sub>R<sup>a</sup>, -OSO<sub>3</sub>H, -H, -NH<sub>2</sub>, -OH, -O-Pg, or -NH-Pg and n is 1, 2, or 3; or a pharmaceutically acceptable salt or solvate thereof.

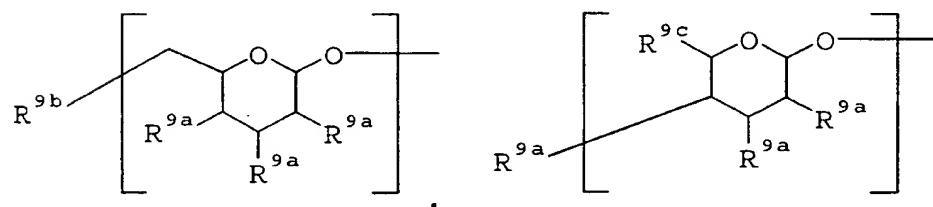
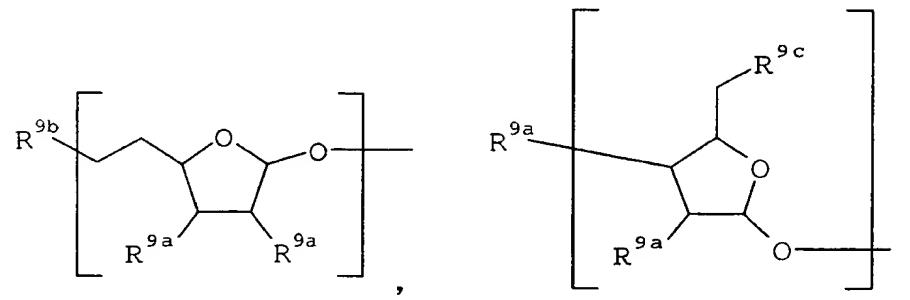
5. The compound of claim 4 wherein D is n-pentoxy; R<sup>9</sup> and R<sup>9a</sup> are independently hydroxy or amino; and R<sup>9b</sup> is -OH or -OPO<sub>2</sub>R<sup>a</sup>; or a pharmaceutical salt or solvate thereof.
6. The compound of claim 5 wherein R<sup>9</sup> is hydroxy at each occurrence; and R<sup>9b</sup> is -OPO<sub>2</sub>R<sup>a</sup>, where R<sup>a</sup> is methyl or methoxy; or a pharmaceutical salt or solvate thereof.
- 5 7. A pharmaceutical formulation comprising one or more pharmaceutical carriers, diluents, or excipients and a compound of claim 1.
8. A method of inhibiting fungal activity comprising administering to a recipient in need of such inhibition an effective amount of a compound represented by structure I:



10 wherein R is an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or heteroaryl group; R<sup>1</sup> is independently -H, -OH or -O-Pg; R<sup>2</sup> is -H, -CH<sub>3</sub>, -NH<sub>2</sub>, or -NH-Pg; R<sup>3</sup> is -H, -CH<sub>3</sub>, -CH<sub>2</sub>CONH<sub>2</sub>, -CH<sub>2</sub>CONH-Pg, -CH<sub>2</sub>CH<sub>2</sub>NH<sub>2</sub>, or -CH<sub>2</sub>CH<sub>2</sub>NH-Pg; R<sup>5</sup> is -OH, -OSO<sub>3</sub>H, or -OPO<sub>2</sub>HR<sup>a</sup>, where R<sup>a</sup> is hydroxy, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>1</sub>-C<sub>6</sub> alkoxy, phenyl, phenoxy, *p*-halophenyl, *p*-halophenoxy, *p*-nitrophenyl, *p*-nitrophenoxy, benzyl, 15 benzyloxy, *p*-halobenzyl, *p*-halobenzyloxy, *p*-nitrobenzyl, or *p*-nitrobenzyloxy; R<sup>6</sup> is -H, -OH, or -OSO<sub>3</sub>H; R<sup>7</sup> is -H or -CH<sub>3</sub>; R<sup>4</sup> and R<sup>8</sup> are independently, hydrogen, or hydroxy and at least one of R<sup>4</sup> and R<sup>8</sup> is a sugar moiety of the formula



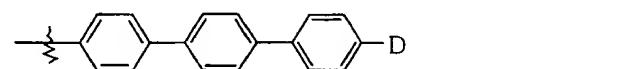
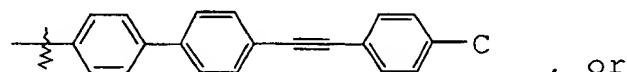
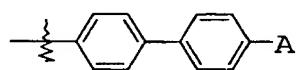
where  $R^9$  is independently -H, -OH, -N<sub>3</sub>, -O-Pg, -NH<sub>2</sub>, -NH-Pg, -OPO<sub>2</sub>R<sup>a</sup>, or a second sugar moiety comprising one to three sugar units selected from the group consisting of



, and mixtures

thereof, wherein  $R^9a$  is -H, -OH, -N<sub>3</sub>, -NH<sub>2</sub>, -O-Pg, or -NH-Pg,  $R^9b$  is -OPO<sub>2</sub>R<sup>a</sup>, -OSO<sub>3</sub>H, -H, -NH<sub>2</sub>, -OH, -O-Pg, or -NH-Pg,  $R^9c$  is -CH<sub>3</sub>, -CH<sub>2</sub>OH, -CH<sub>2</sub>N<sub>3</sub>, -CH<sub>2</sub>OSO<sub>3</sub>H, -CH<sub>2</sub>NH-Pg, -CH<sub>2</sub>O-Pg, -CO<sub>2</sub>H, or -CO<sub>2</sub>-Pg, where  $R^a$  is as defined above, and no more than one  $R^9$  is represented by said second sugar moiety; Pg is a protecting group (i.e., -O-Pg is a hydroxy protecting group, -NH-Pg is an amino protecting group, -CH<sub>2</sub>CONH-Pg is an amido protecting group and -CO<sub>2</sub>-Pg is a carboxy protecting group); and pharmaceutically acceptable salts, esters, hydrates or solvates thereof.

9. The method of Claim 8 wherein  $R$  is

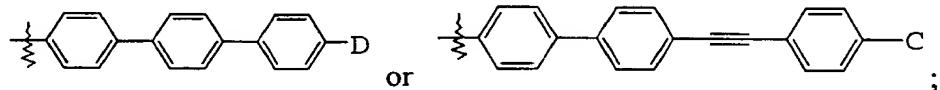


where A, B, C and D are independently hydrogen, C<sub>1</sub>-C<sub>12</sub> alkyl, C<sub>2</sub>-C<sub>12</sub> alkynyl, C<sub>1</sub>-C<sub>12</sub> alkoxy, C<sub>1</sub>-C<sub>12</sub> alkylthio, halo, or -O-(CH<sub>2</sub>)<sub>m</sub>-[O-(CH<sub>2</sub>)<sub>n</sub>]<sub>p</sub>-O-(C<sub>1</sub>-C<sub>12</sub> alkyl) or -O-(CH<sub>2</sub>)<sub>q</sub>-X-

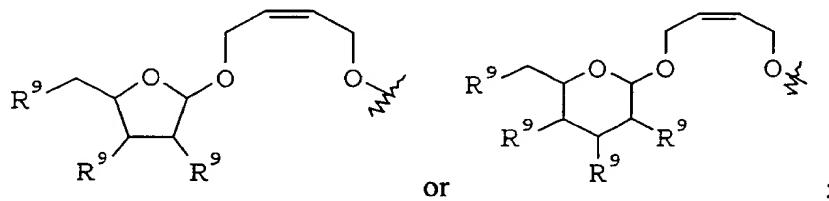
E; m is 2, 3 or 4; n is 2, 3 or 4; p is 0 or 1; q is 2, 3 or 4; X is pyrrolidino, piperidino or piperazino; and E is hydrogen, C<sub>1</sub>-C<sub>12</sub> alkyl, C<sub>3</sub>-C<sub>12</sub> cycloalkyl, benzyl or C<sub>3</sub>-C<sub>12</sub> cycloalkylmethyl.

10. The method of claim 8 wherein the recipient is a human.

5 11. The method of claim 9 wherein R<sup>1</sup> is hydroxy at each occurrence; R<sup>2</sup>, R<sup>3</sup>, and R<sup>7</sup> are each methyl; R is a moiety of the formula



R<sup>4</sup> is hydroxy; R<sup>5</sup> is -OPO<sub>2</sub>HR<sup>a</sup>, where R<sup>a</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>1</sub>-C<sub>4</sub> alkoxy; R<sup>8</sup> is a sugar moiety of the formula

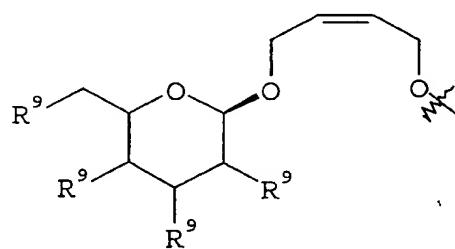


10 or a pharmaceutically acceptable salt or solvate thereof.

12. The method of claim 10 wherein R<sup>5</sup> is hydroxy; R is a moiety of the formula

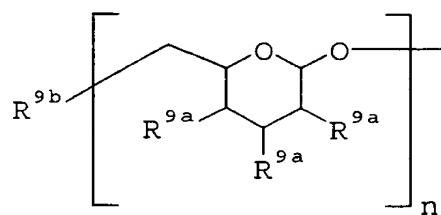


where D is hydrogen or C<sub>3</sub>-C<sub>7</sub> alkoxy; R<sup>8</sup> is a moiety of the formula



15

where R<sup>9</sup> is independently hydrogen, hydroxy, amino, or a moiety of the formula



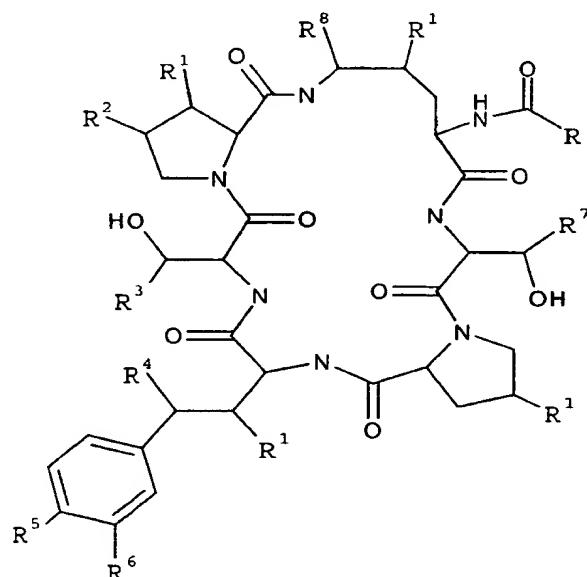
where  $R^{9b}$  is  $-OPO_2R^a$ ,  $-OSO_3H$ ,  $-H$ ,  $-NH_2$ ,  $-OH$ ,  $-O-Pg$ , or  $-NH-Pg$  and  $n$  is 1, 2, or 3; or a pharmaceutically acceptable salt or solvate thereof.

13. The method of claim 12 wherein  $D$  is n-pentoxy;  $R^9$  and  $R^{9a}$  are independently hydroxy or amino; and  $R^{9b}$  is  $-OH$  or  $-OPO_2R^a$ ; or a pharmaceutical salt or solvate thereof.

5 14. The method of claim 13 wherein  $R^9$  is hydroxy at each occurrence; and  $R^{9b}$  is  $-OPO_2R^a$ , where  $R^a$  is methyl or methoxy; or a pharmaceutical salt or solvate thereof.

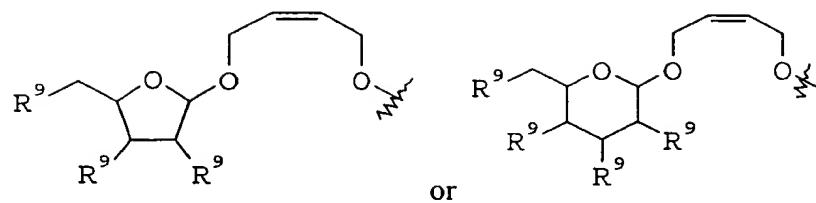
15. The method according to Claim 8 wherein the fungal activity arises from one or more fungi selected from the group consisting of *Candida albicans*, *Aspergillus fumigatis*, and *Candida parapsilosis*.

10 16. A method of inhibiting parasitic activity comprising administering to a recipient in need of such inhibition an effective amount of a compound represented by structure I:

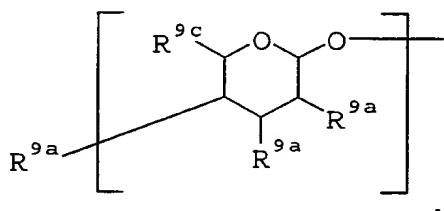
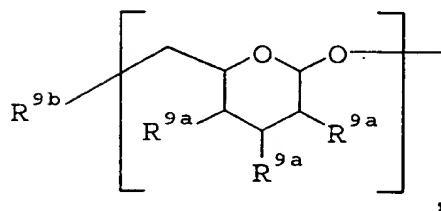
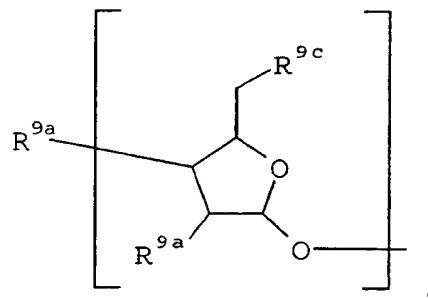
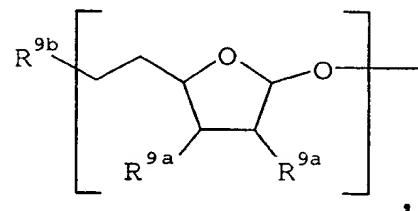


wherein  $R$  is an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or heteroaryl group;  $R^1$  is independently  $-H$ ,  $-OH$  or  $-O-Pg$ ;  $R^2$  is  $-H$ ,  $-CH_3$ ,  $-NH_2$ , or  $-NH-Pg$ ;

15  $R^3$  is  $-H$ ,  $-CH_3$ ,  $-CH_2CONH_2$ ,  $-CH_2CONH-Pg$ ,  $-CH_2CH_2NH_2$ , or  $-CH_2CH_2NH-Pg$ ;  $R^5$  is  $-OH$ ,  $-OSO_3H$ , or  $-OPO_2HR^a$ , where  $R^a$  is hydroxy, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>1</sub>-C<sub>6</sub> alkoxy, phenyl, phenoxy, *p*-halophenyl, *p*-halophenoxy, *p*-nitrophenyl, *p*-nitrophenoxy, benzyl, benzylxy, *p*-halobenzyl, *p*-halobenzylxy, *p*-nitrobenzyl, or *p*-nitrobenzylxy;  $R^6$  is  $-H$ ,  $-OH$ , or  $-OSO_3H$ ;  $R^7$  is  $-H$  or  $-CH_3$ ;  $R^8$  and  $R^9$  are independently, hydrogen, or hydroxy and at least one of  $R^8$  and  $R^9$  is a sugar moiety of the formula



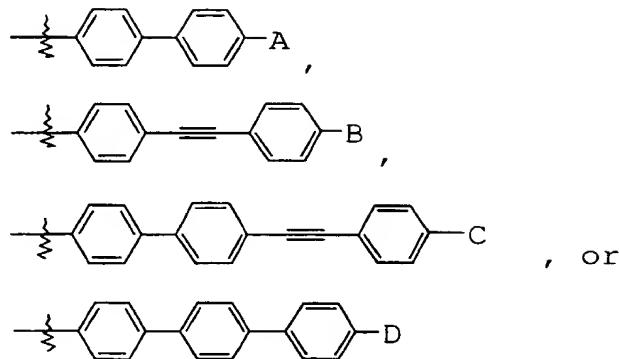
where  $R^9$  is independently -H, -OH, -N<sub>3</sub>, -O-Pg, -NH<sub>3</sub>, -NH-Pg, -OPO<sub>2</sub>R<sup>a</sup>, or a second sugar moiety comprising one to three sugar units selected from the group consisting of



, and mixtures

5 thereof, wherein  $R^{9a}$  is -H, -OH, -N<sub>3</sub>, -NH<sub>2</sub>, -O-Pg, or -NH-Pg,  $R^{9b}$  is -OPO<sub>2</sub>R<sup>a</sup>, -OSO<sub>3</sub>H, -H, -NH<sub>2</sub>, -OH, -O-Pg, or -NH-Pg,  $R^{9c}$  is -CH<sub>3</sub>, -CH<sub>2</sub>OH, -CH<sub>2</sub>N<sub>3</sub>, -CH<sub>2</sub>OSO<sub>3</sub>H, -CH<sub>2</sub>NH-Pg, -CH<sub>2</sub>O-Pg, -CO<sub>2</sub>H, or -CO<sub>2</sub>-Pg, where  $R^a$  is as defined above, and no more than one  $R^9$  is represented by said second sugar moiety; Pg is a protecting group (i.e., -O-Pg is a hydroxy protecting group, -NH-Pg is an amino protecting group, -CH<sub>2</sub>CONH-Pg is an amido protecting group and -CO<sub>2</sub>-Pg is a carboxy protecting group); and pharmaceutically acceptable salts, esters, hydrates or solvates thereof.

10 17. The method of Claim 16 wherein R is



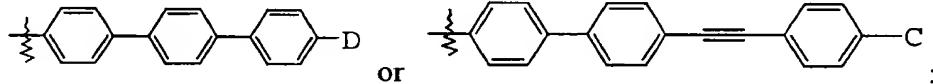
where A, B, C and D are independently hydrogen, C<sub>1</sub>-C<sub>12</sub> alkyl, C<sub>2</sub>-C<sub>12</sub> alkynyl, C<sub>1</sub>-C<sub>12</sub> alkoxy, C<sub>1</sub>-C<sub>12</sub> alkylthio, halo, or -O-(CH<sub>2</sub>)<sub>m</sub>-[O-(CH<sub>2</sub>)<sub>n</sub>]<sub>p</sub>-O-(C<sub>1</sub>-C<sub>12</sub> alkyl) or -O-(CH<sub>2</sub>)<sub>q</sub>-X-

E; m is 2, 3 or 4; n is 2, 3 or 4; p is 0 or 1; q is 2, 3 or 4; X is pyrrolidino, piperidino or

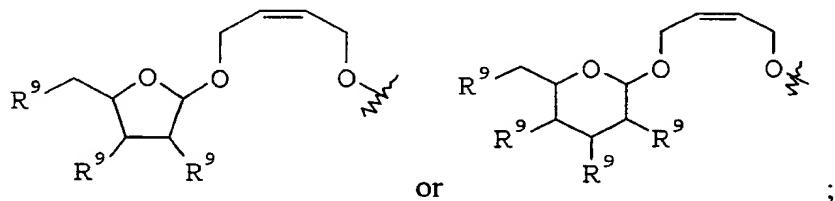
5 piperazino; and E is hydrogen, C<sub>1</sub>-C<sub>12</sub> alkyl, C<sub>3</sub>-C<sub>12</sub> cycloalkyl, benzyl or C<sub>3</sub>-C<sub>12</sub> cycloalkylmethyl.

18. The method of claim 16 wherein the recipient is a human.

19. The method of claim 17 wherein R<sup>1</sup> is hydroxy at each occurrence; R<sup>2</sup>, R<sup>3</sup>, and R<sup>7</sup> are each methyl; R is a moiety of the formula



10 R<sup>4</sup> is hydroxy; R<sup>5</sup> is -OPO<sub>2</sub>HR<sup>a</sup>, where R<sup>a</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>1</sub>-C<sub>4</sub> alkoxy; R<sup>8</sup> is a sugar moiety of the formula

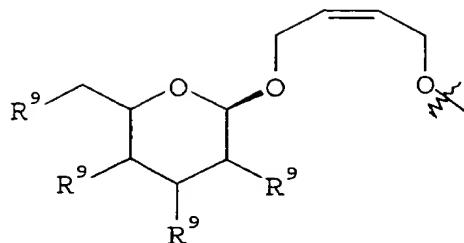


or a pharmaceutically acceptable salt or solvate thereof.

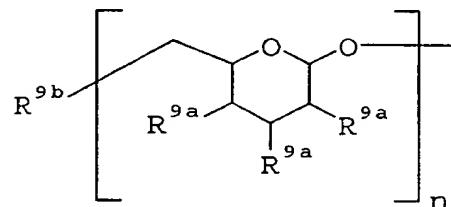
15 20. The method of claim 19 wherein R<sup>5</sup> is hydroxy; R is a moiety of the formula



where D is hydrogen or C<sub>3</sub>-C<sub>7</sub> alkoxy; R<sup>8</sup> is a moiety of the formula



where  $R^9$  is independently hydrogen, hydroxy, amino, or a moiety of the formula



5 where  $R^{9b}$  is  $-OPO_2R^a$ ,  $-OSO_3H$ ,  $-H$ ,  $-NH_2$ ,  $-OH$ ,  $-O-Pg$ , or  $-NH-Pg$  and  $n$  is 1, 2, or 3; or a pharmaceutically acceptable salt or solvate thereof.

21. The method of claim 20 wherein D is n-pentoxy;  $R^9$  and  $R^{9a}$  are independently hydroxy or amino; and  $R^{9b}$  is  $-OH$  or  $-OPO_2R^a$ ; or a pharmaceutical salt or solvate thereof.
22. The method of claim 21 wherein  $R^9$  is hydroxy at each occurrence; and  $R^{9b}$  is  $-OPO_2R^a$ , where  $R^a$  is methyl or methoxy; or a pharmaceutical salt or solvate thereof.
- 10 23. The method according to Claim 16 wherein the parasitic activity arises from *Pneumocystis carinii*.